

COMPREHENSIVE ANALYSIS OF THE U.S. STOCK MARKET DYNAMICS

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INTRODUCTION

DATASETS

- STOCK

- CATEGORY

- TICKER

PROBLEM DEFINITION

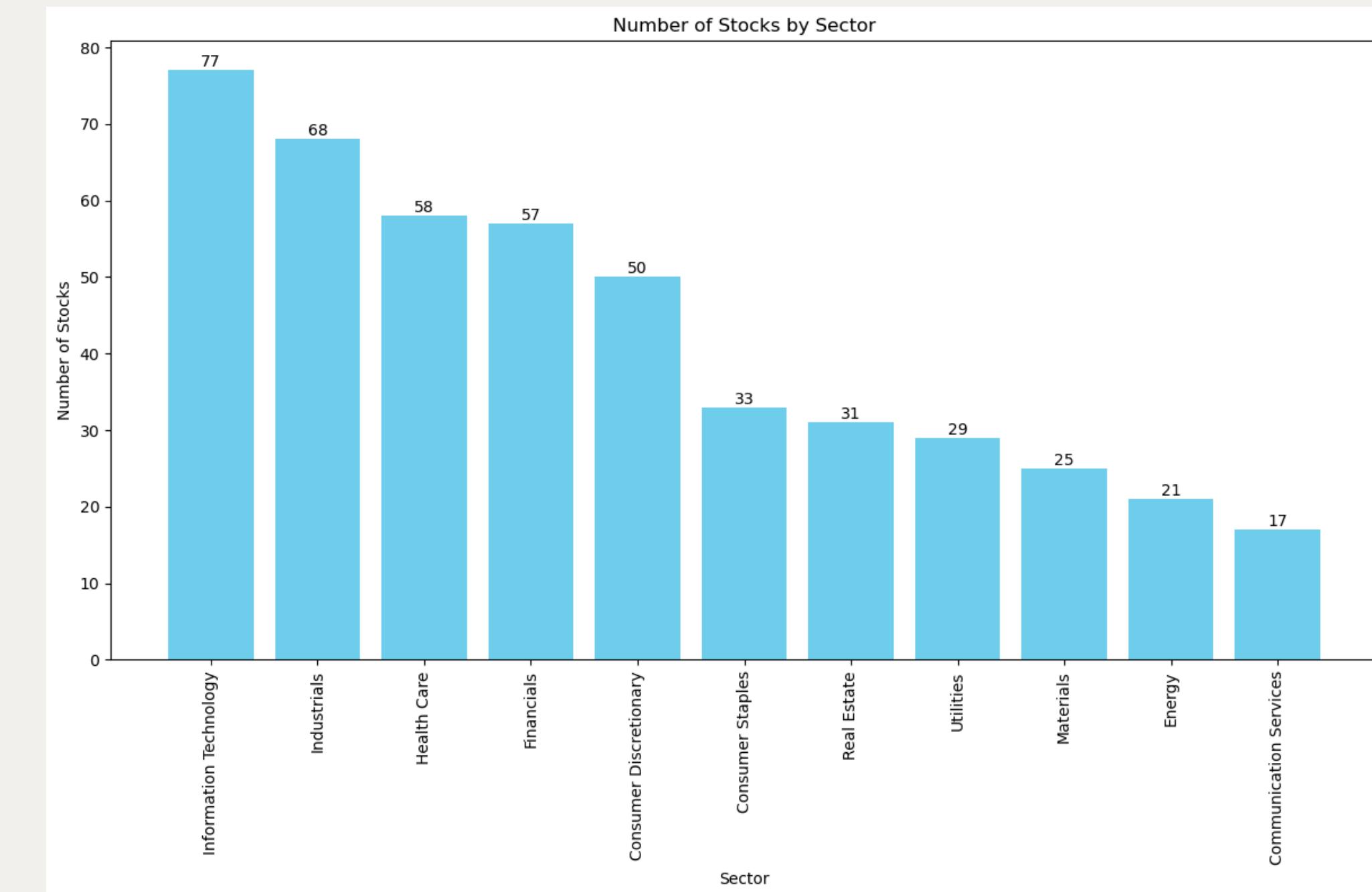
- Conduct Stock Market Analysis
- Sector and Company Performance
- Analyzing Trading Volumes
- Leading and Lagging Stocks

MOTIVATION

- Empowering Individuals in Stock Market
- Catering to Growing Market Participation
- Understanding Sectoral Dynamics
- Mitigating Risks and Identifying Opportunities

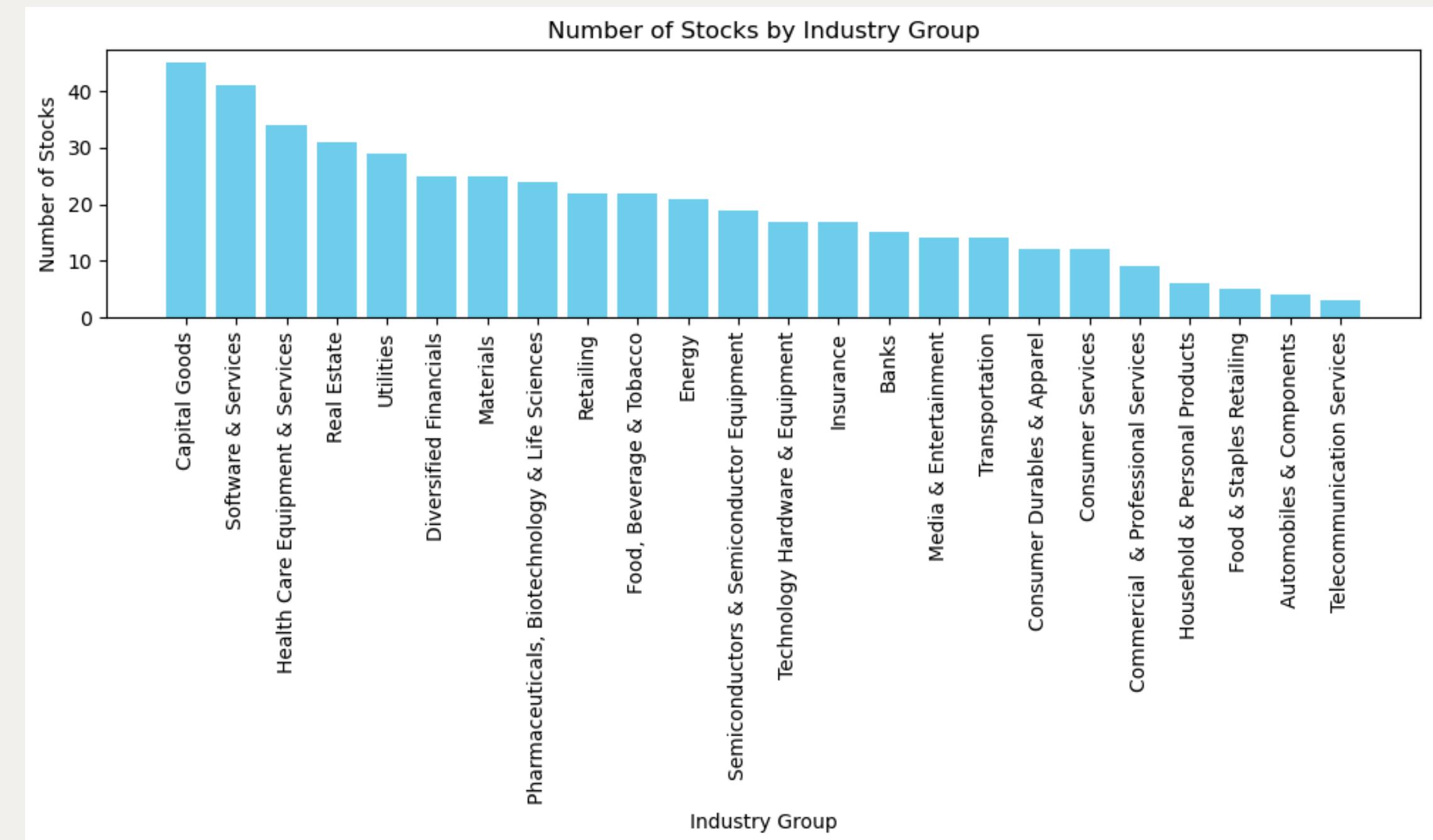
Distribution of stocks by sector & Industry Groups

- According to the Global Industry Classification Standard (GICS), there are:
 - 11 sectors
 - 25 industry groups
 - 74 industries
 - 163 sub-industries of stocks.
- Initially, we conduct a comprehensive analysis of all stocks at the sector level.

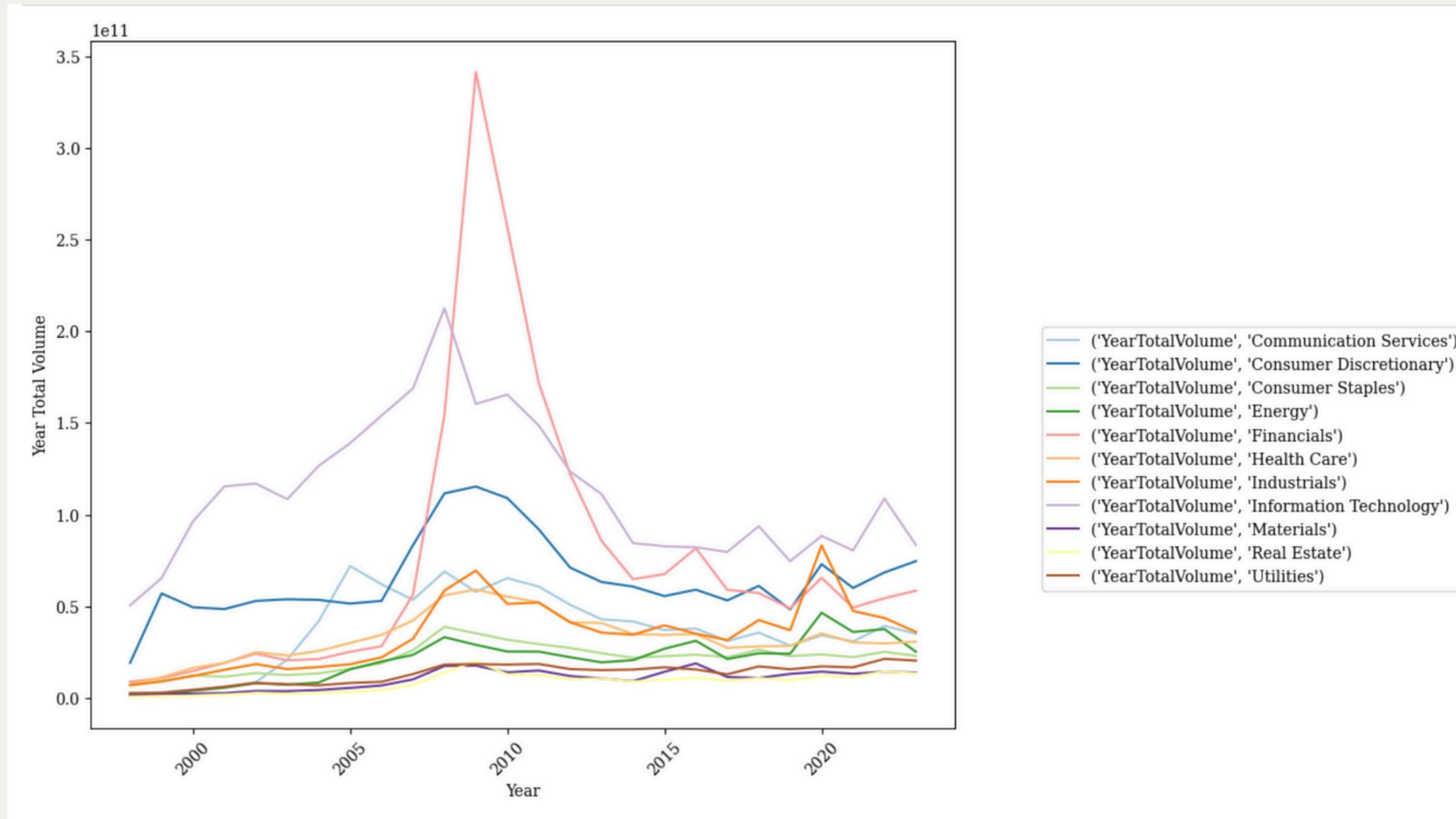


Distribution of stocks by sector & Industry Groups

- Then, we delve into several industry groups for in-depth study:
 - Healthcare Equipment & Services
 - Energy
 - Software & Services
 - ...

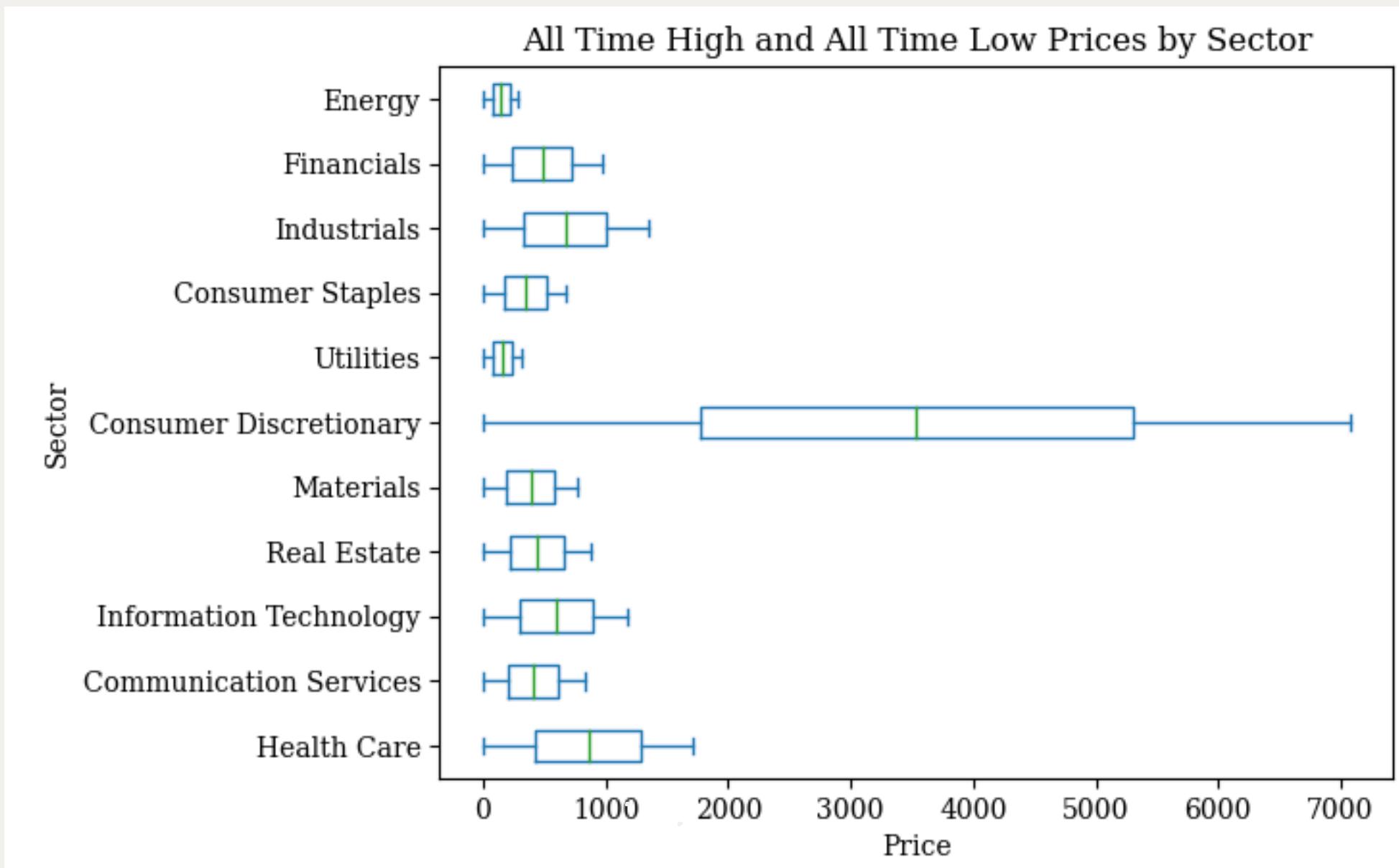


Stock Trading Volume for Each Sector



- During 2008-2009, the trading volume for the financial sector is notably high--financial crisis
- Trading volume for the IT sector reached the peak around 2007-2008--Golden period of IT
- From 2019 to 2021, almost all sectors experienced fluctuations in trading volume--COVID-19

How do price distributions differ across industries?

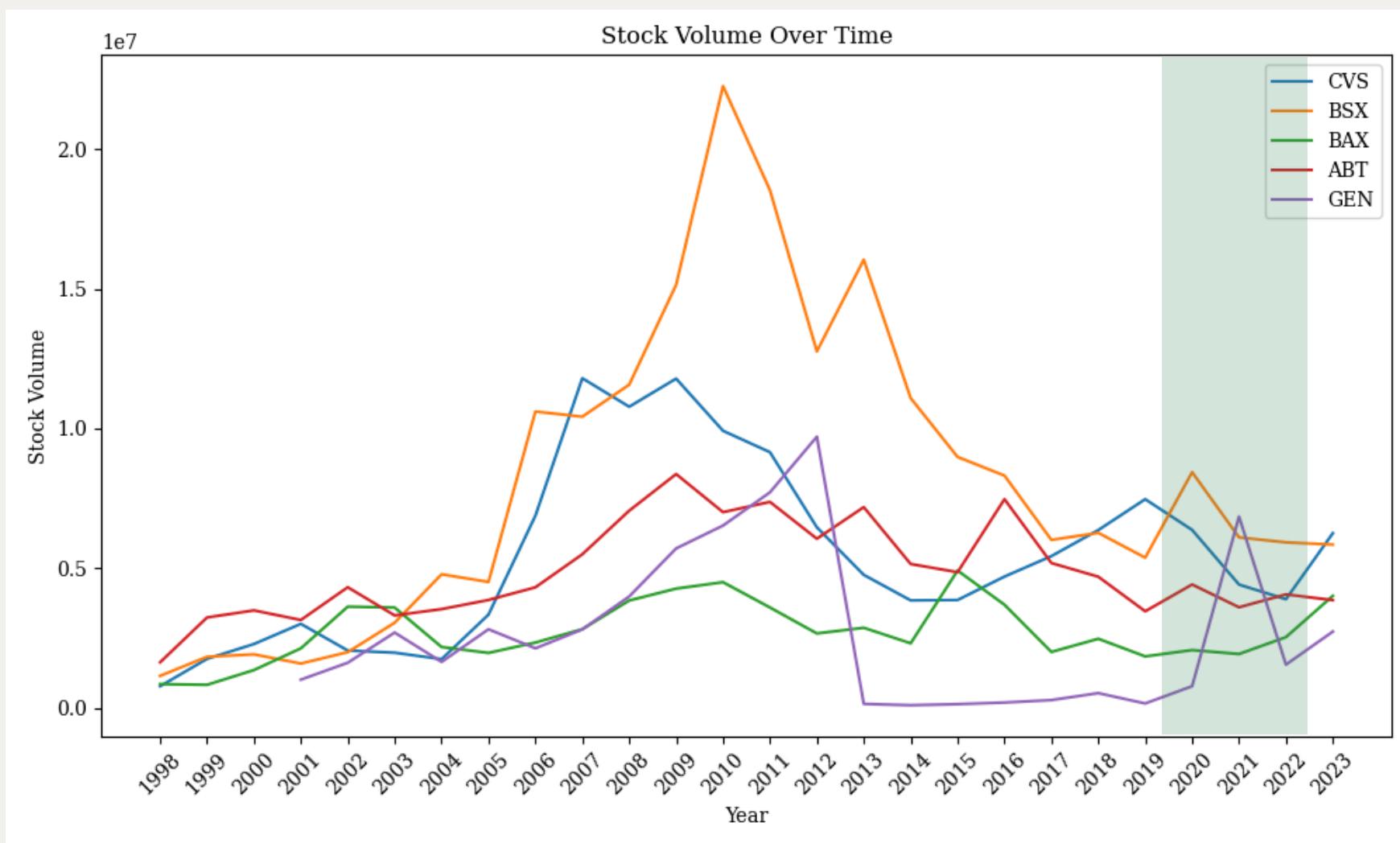


- **Consumer Discretionary** had a huge spread whereas **utilities** and **energy** had the least spread.
- All-time highs and lows provide only partial insight; a comprehensive analysis is essential to gain a deeper understanding of an industry.

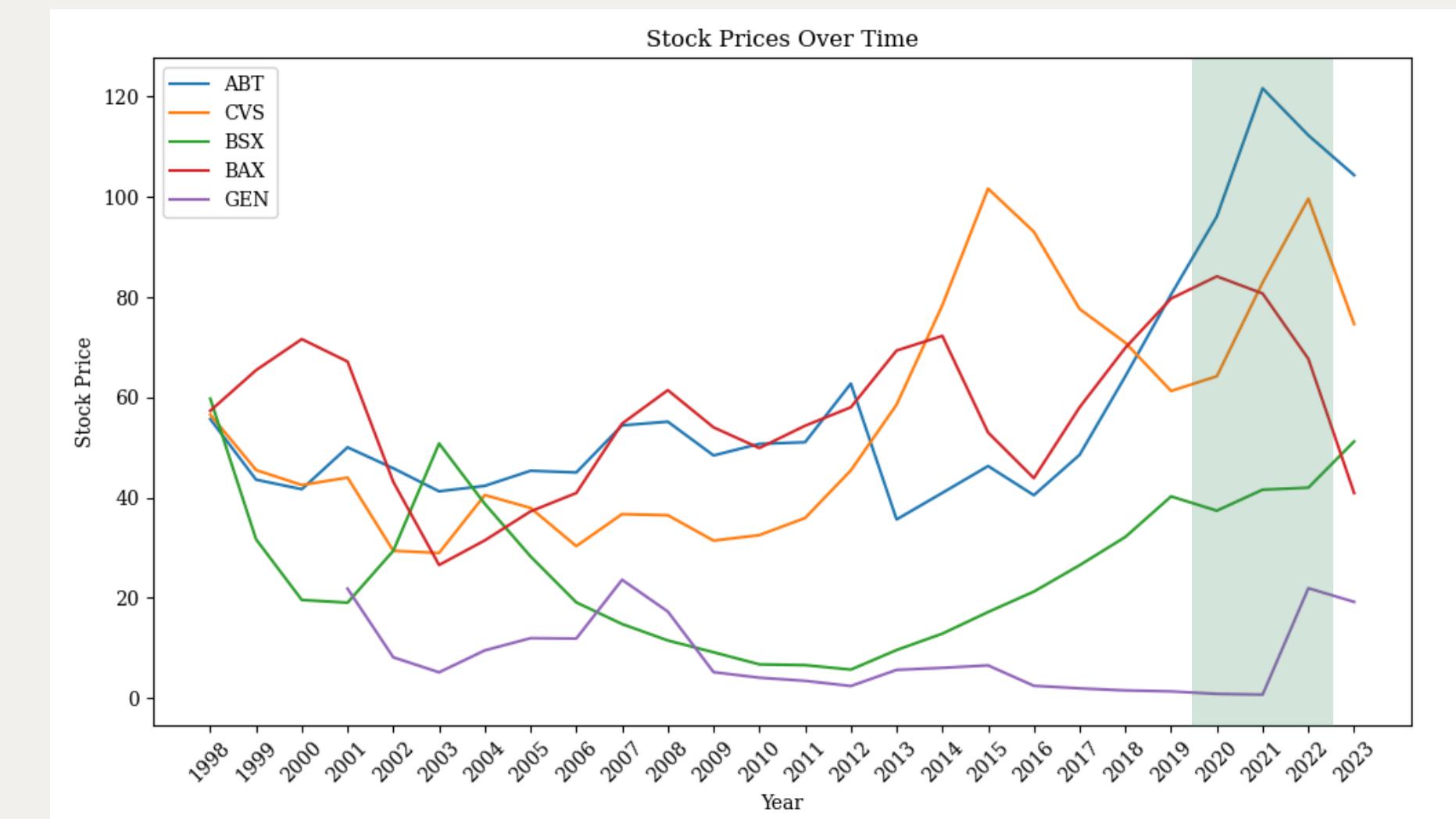
Health Care

How Covid-19 is impacting the stock market?

VOLUME



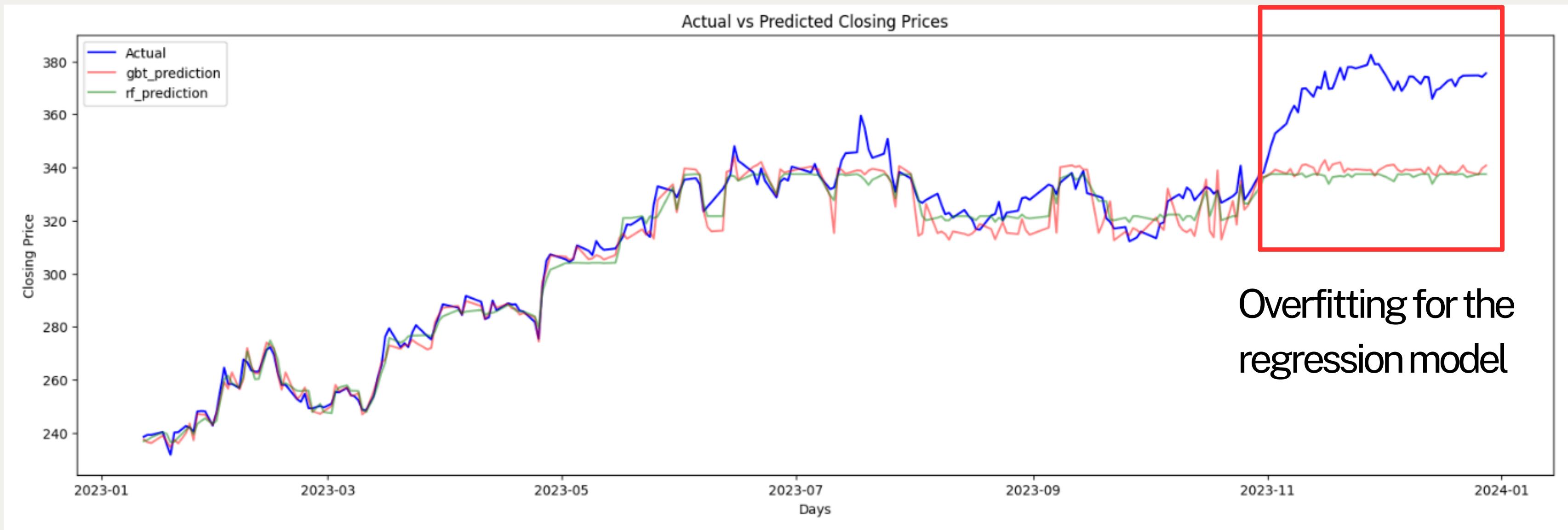
PRICE



The pandemic brought **fluctuations and decline** in 2019-2020, reflecting market uncertainty and disruptions in healthcare services. However, these stocks are showing signs of **recovery** in 2022, demonstrating resilience and adaptability to changing market dynamics.

Information Technology

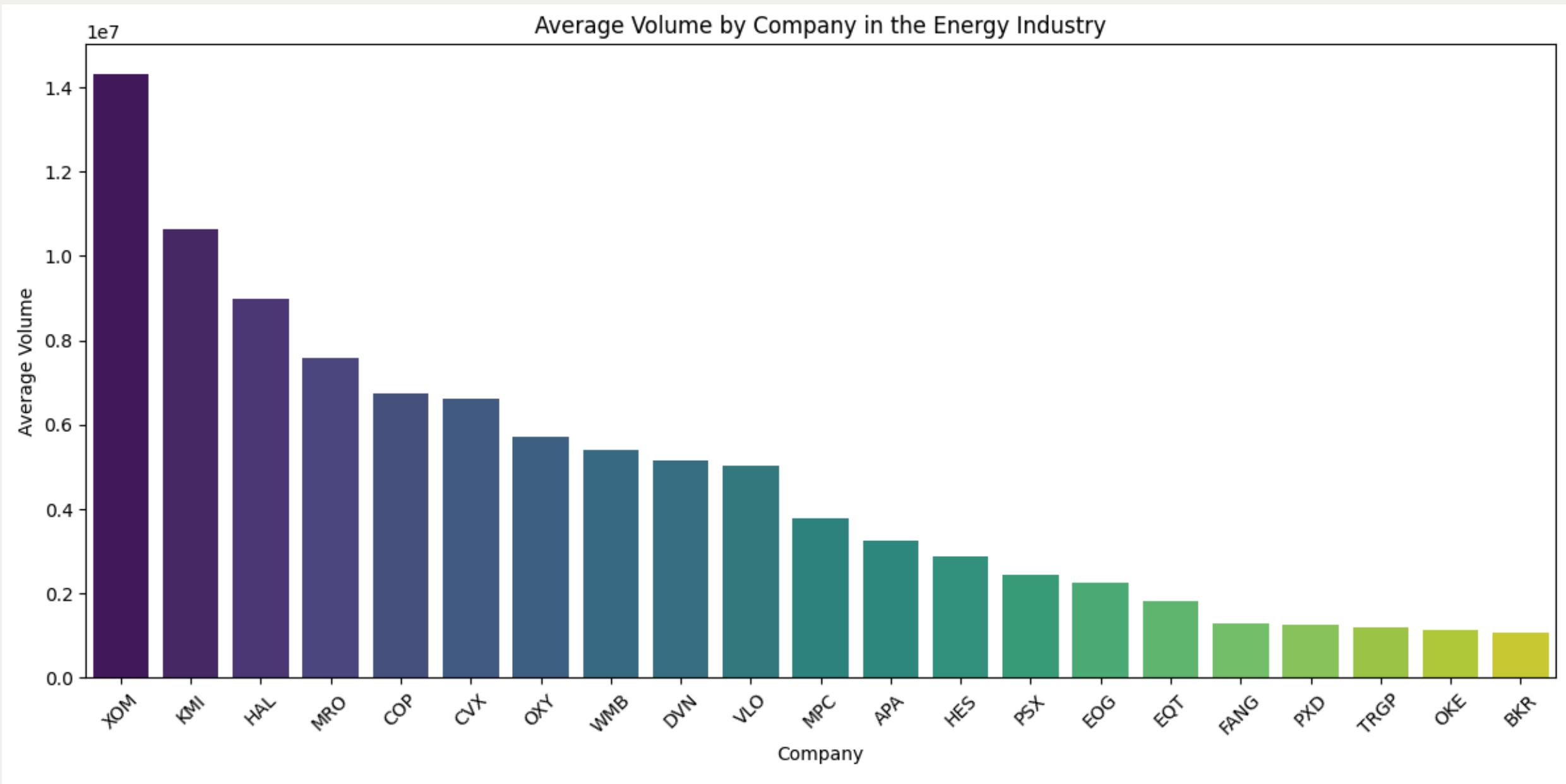
Regression Model on MSFT's Closing Prices



- Previous day close price
- Daily Return
- Intra-day volatility
- Daily volatility
- 7-day moving average
- 30-day moving average
- gbt : RMSE of 15.05, MAE of 9.48
- rf : RMSE of 15.52, MAE of 9.26

Energy

Distribution of volume across companies



- Exxon Mobil (XOM) ranks as first because of upward trend oil prices and new oil discoveries in Guyana - shows a promising future
- Low trading volume for Hess Corporation (HES) - Decrease in revenue (8%) and a decrease in earnings (34%) , Potential buyout news

CONCLUSION

Know what you own, and know why you own it

-Peter Lynch

- **Healthcare:** Dominated by CVS, significant growth post-pandemic; fueled by technological and regulatory advancements.
- **Software Services:** Volatile trading volumes and prices, due to emerging tech and keeping up with new tech.
- **Automotive and Parts:** Despite supply chain issues the industry witnessed resilience with consistent stock prices; significant market presence by Ford, GM, and Tesla (market leader with \$1 trillion market cap).
- **Energy:** Led by ExxonMobil; industry showed high liquidity and trading volumes amidst geopolitical uncertainty with a high returns potential given the need for a sustainable move
- **Food:** Basic necessity making the industry stable and ever-growing

FUTURE STEPS

Sentiment Analysis

Sentiment analysis of annual reports data instead of reading through tons of pages

Risk Management

Develop diversification strategies to mitigate identified risks in volatile and resilient sectors.

Focus on Predictive Analytics

Work with the data to predict volume/price with complicated models

Deepen Industry Analysis

Explore emerging companies that are not covered in the initial analysis.

01.
**Data
Management**

02.
**Processing
Efficiency**

03.
**Uncovering
Valuable
Insights**

04.
**Prioritizing
Sectors for
Deeper Analysis**

CHALLENGES





Thank you
very much!